



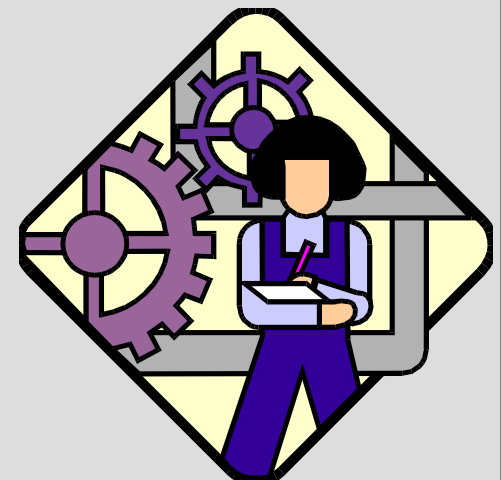
# INTRODUCTION TO ESPC

## *Energy Savings Performance Contracting*

Mr. K. Quinn Hart

Mr. Tim Adams

HQ AFCESA/CESM





# SESSION 1

Introduction



# OVERVIEW

- Training Objective
- Course Outline
- Goal Reduction Status Update
- Introduction to UESC & ESPC
- Session Summary



# TRAINING OBJECTIVE

To enable base personnel to implement an effective ESPC program that supports Air Force energy efficiency reduction goals mandated by the Energy Policy Act of 1992 and Executive Order 13123

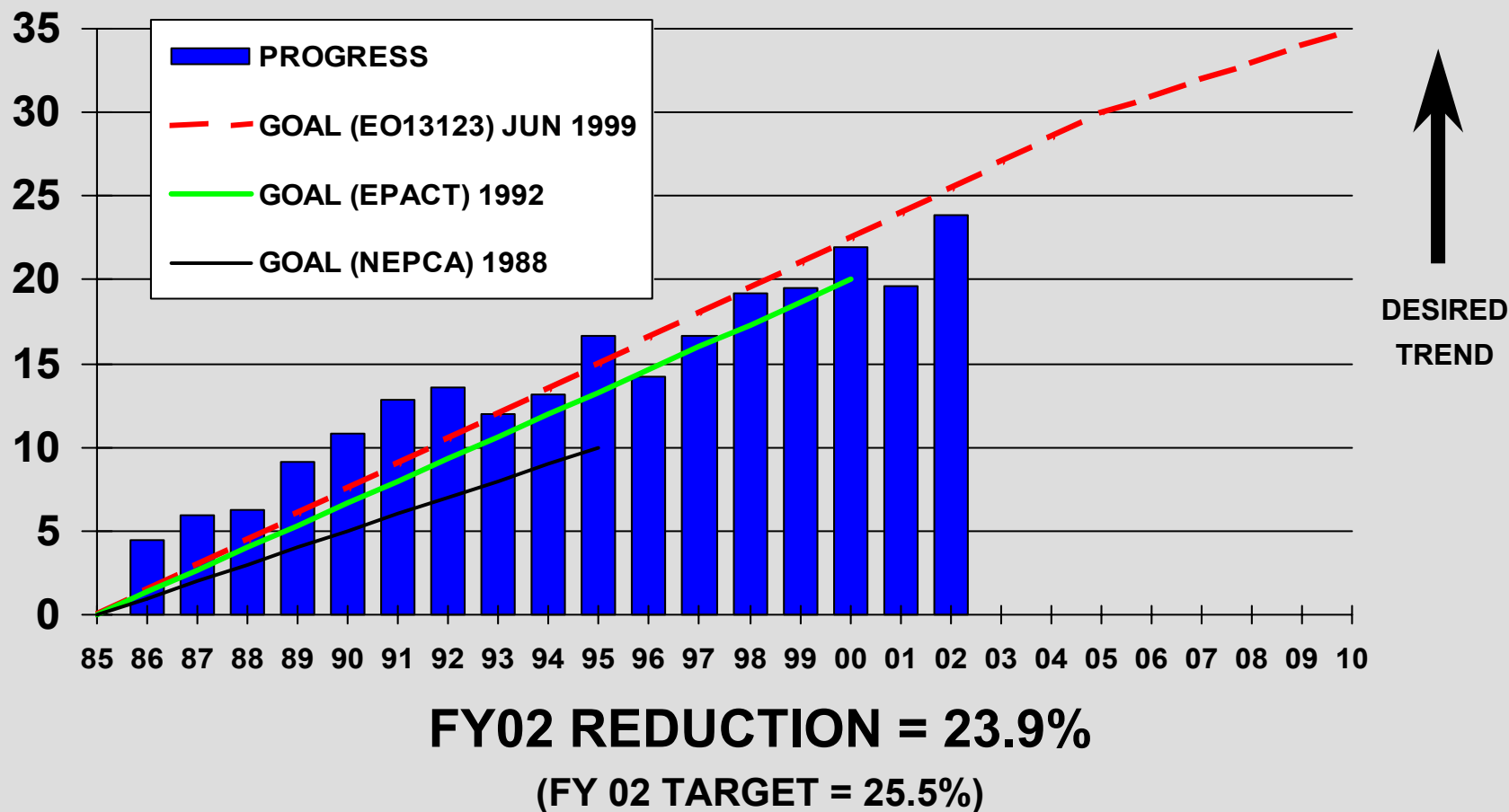


# COURSE OUTLINE

- Introduction
- The ESPC Team
- Contract Overview
- Ordering Work
- Economics
- Measurement and Verification (M&V)
- Special Interest items
- Summary

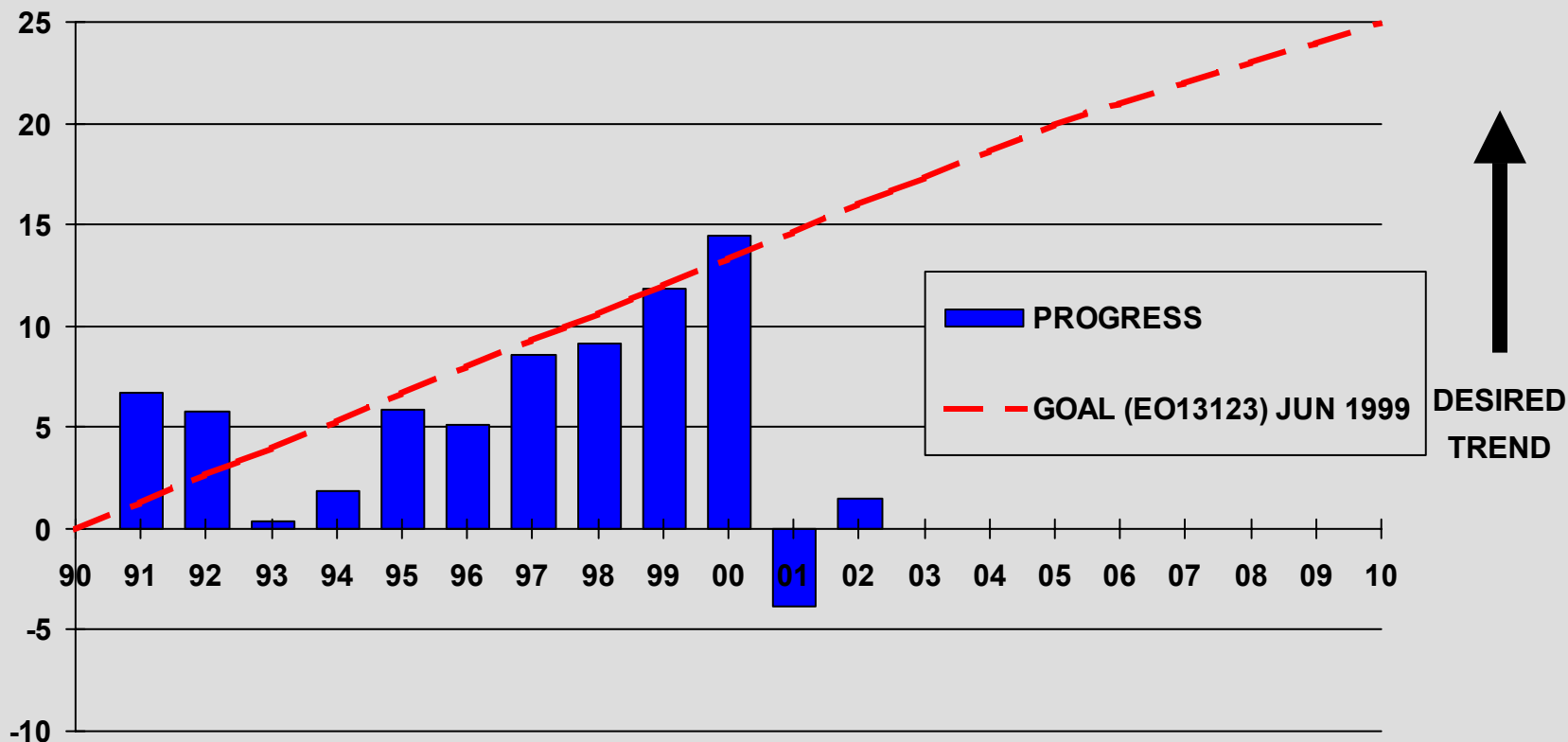


# Cumulative Reduction Air Force Facility Energy





# Cumulative Reduction Air Force Industrial Energy

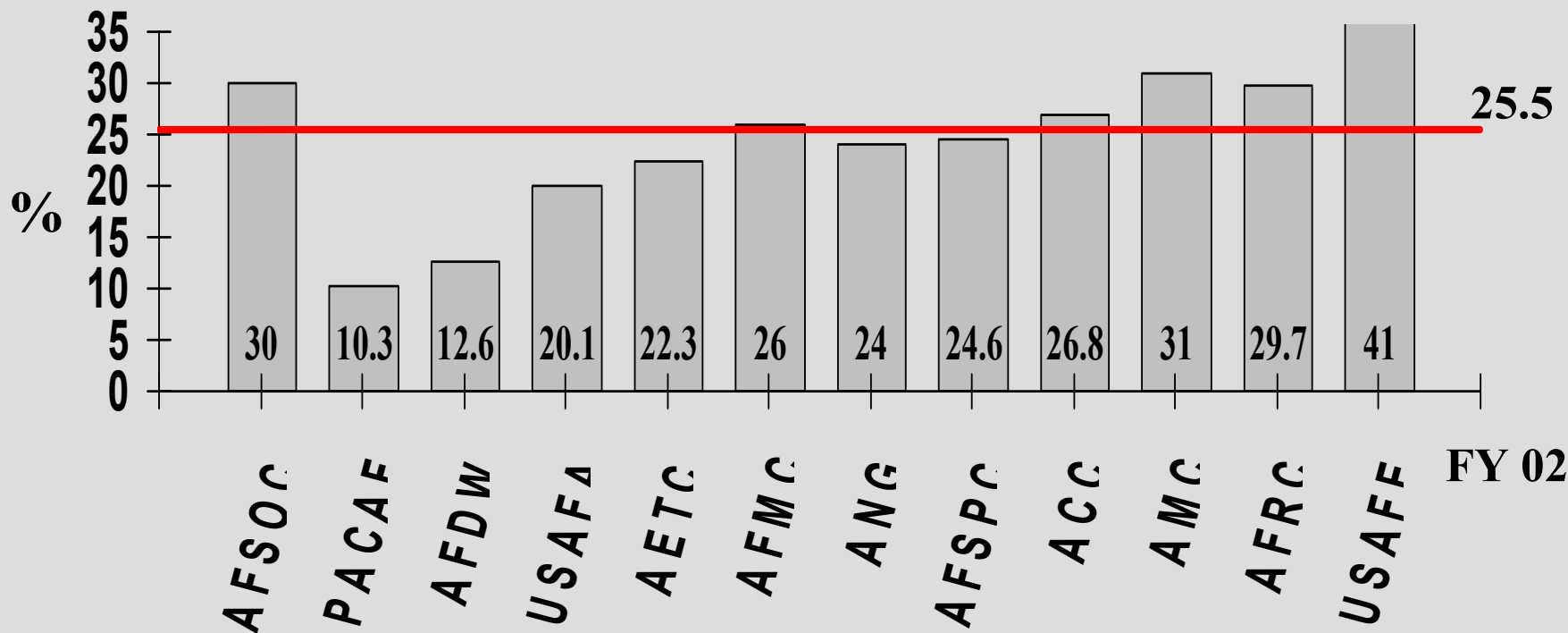


**FY02 REDUCTION = 1.5%**  
(FY 02 TARGET = 16%)



# Cumulative Reduction Facility Energy by MAJCOM

■ PROGRESS — GOAL (EO 13123)







# UTILITY ENERGY SERVICE CONTRACTS (UESC)

- Statutory Authority from 10 USC 2865
  - Negotiated sole source with regulated utility company
  - Financing by utility company
  - Payment of interest is allowed
  - Payment from funds budgeted for utility services



# UESC BENEFITS

- Takes advantage of utility company financing
- May provide for no-cost energy audits
- Takes advantage of rebates/incentive programs
- Repayment through utility bills
- Limitations: Project must have 10 year payback; Contract also cannot exceed 10 years



# UESC CONTRACT VEHICLES

- As modification to existing utility service contract
- As exhibit to GSA area wide contract
- As separate contract
- Irrespective of which choice selected, use of “model agreement” recommended
  - Model agreement approved by DoD in Apr 97



# ESPC DEFINITION

The term . . . “means contracts that provide for the performance of services for the design, acquisition, financing, installation, testing, operation, and where appropriate, maintenance and repair, of an identified energy or water conservation measure . . . .”  
(Sec. 703, E.O. 13123)



# ENERGY SAVINGS PERFORMANCE CONTRACTS (ESPC)

- Statutory Authority from 42 USC 8287 and 10 USC 2865
- Contract for up to 25 years with qualified Energy Services Company (ESCO)
- Financing provided by ESCO - Funds not needed to implement contract
- ESCO guarantees a savings to the base
- ESCO repaid from the savings - Payment of interest is allowed



# STATUTORY AUTHORITY

- **42 USCA 8287**

- Federal Agencies may enter into ESPCs for up to 25 years
- Funding of cancellation charges usually not required
- Aggregate annual payments may not exceed amount agency would have paid without contract
  - Only required to have funds for current year
- Contractor owns, operates, and maintains equipment
- Contractor must provide guarantee of savings
  - Equipment performance/savings must be validated annually



# DOD SPECIFIC STATUTORY AUTHORITY

- **10 USCA 2865**
  - The Secretary of Defense shall develop a simplified method of contracting for energy savings performance contracts (ESPC).
  - Agencies will implement all energy conservation measures that have a 10-year or better payback
  - The Secretary (of Defense) may also provide for direct negotiation with ESPC contractors who have been selected competitively and approved by any gas or electric utility serving the installation --





# CODE OF FEDERAL REGULATIONS (CFR)

- Implements Energy Policy Act of 1992
- **10 CFR 436.30** Contract **SHALL:**
  - Authorize modification, replacement, or changes of equipment at no cost to the agency
  - Provide for disposition of title to equipment
  - Require prior CO approval of financing agreements
  - Provide for a guarantee of energy cost savings and an annual audit to verify achievement of guarantees





# CODE OF FEDERAL REGULATIONS (con't.)

- **10 CFR 436.30 Contract SHALL:**
  - Waive Requirement for Certified Cost and Pricing data
  - Treat interest as an allowable cost
  - Contain a cancellation ceiling that shall not be exceeded if contract terminated for convenience
  - Require that payments be made only from funds available for payment of energy and related O&M expenses



# ESPC BENEFITS

- Takes advantage of ESCO financing
- Takes advantage of utility company rebates/incentive programs
- Paid based on Guaranteed Savings
- Provides single POC for audit, design, construction, and maintenance
- Provides Infrastructure Improvements that cost no more than utility bill and O&M would cost



# ESPC CONTRACT VEHICLES

- Air Force Regional
- Army Full Service COE Huntsville Regional Contract
- Navy contract for Overseas bases
- Individual Base Contract



# PROGRAM HISTORY

- **Oct 86** Original legislation authorized Shared Energy Savings (SES) contracting
- **Oct 92** EPAct changed name to ESPC
- **Feb 94** First AF ESPC awarded for Randolph AFB
- **Jul 94** First Base-wide ESPC in DOD awarded at Hill AFB
- **Aug 97** Air Force Regional ESPC (RESPC) RFQs issued
- **Sep/Dec 98** Air Force RESPCs awarded
- **Dec 98** First RESPC Task Order completed - Travis AFB
- **Mar 00** RESPC Program Surpassed \$100M Investments



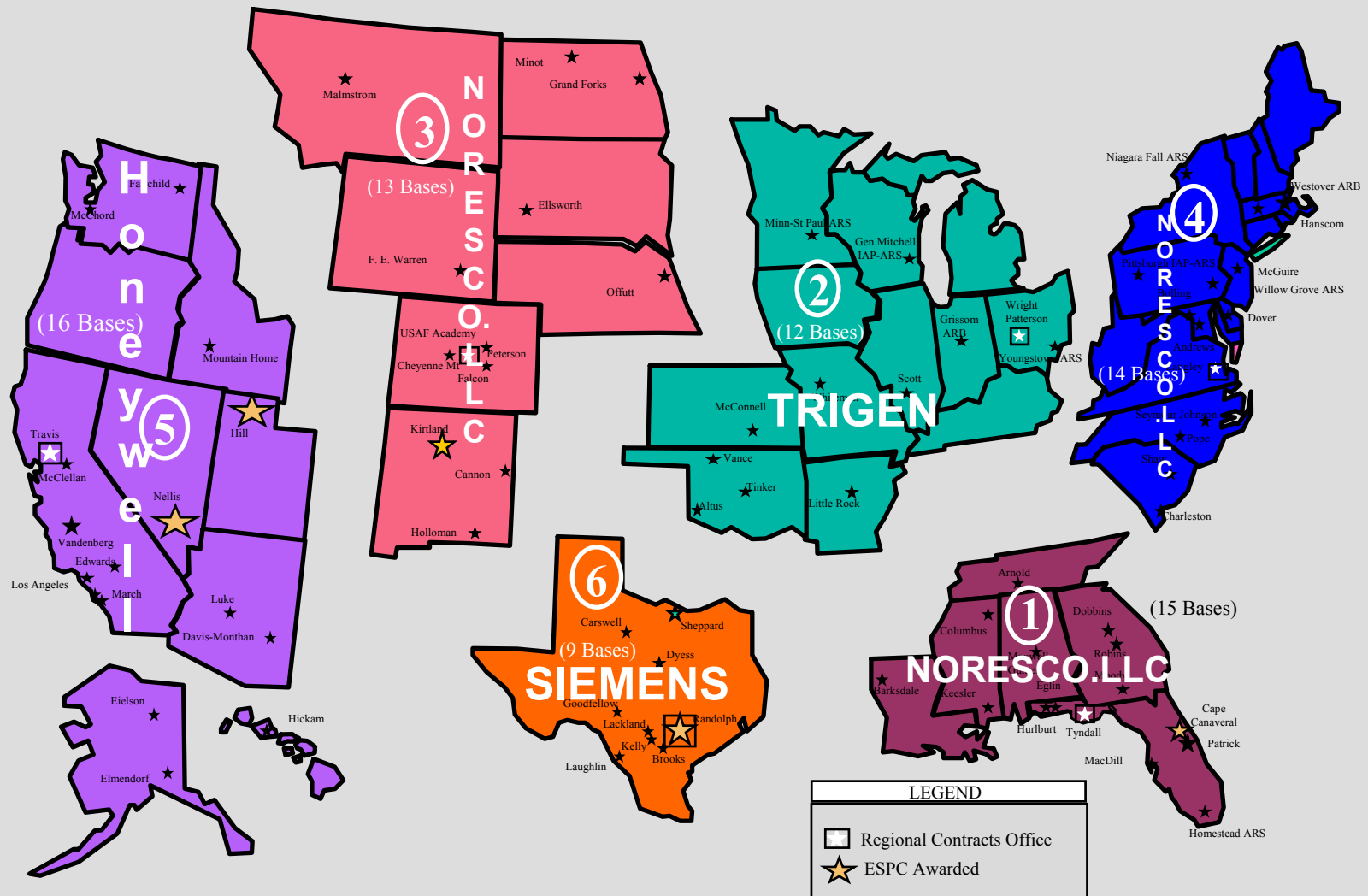
# THE AF REGIONAL ESPCs (RESPC)

- Six regions: Available to 50 states and territories and Korea
- Combined contract capacity: \$1.27B
- Contract type: IDIQ - Single award
- All six contracts awarded Sep - Dec 98
- AF ESPC Regional Contracting Offices (RCO)

| <u>Region</u> | <u>RCO</u> | <u>MAJCOM</u> |
|---------------|------------|---------------|
| 1             | Tyndall    | AETC          |
| 2             | WPAFB      | AFMC          |
| 3             | Peterson   | AFSPC         |
| 4             | Langley    | ACC           |
| 5             | Travis     | AMC           |
| 6             | Randolph   | AETC          |



# AIR FORCE REGIONAL ESPC



[illegible]



# ARMY REGIONAL ESPCs

## AFCEA/Huntsville MOA

- Base works through AFCEA for access to Huntsville contracts
  - AFCEA provides liaison support to Army
  - AFCEA provides semi-annual reviews
- Ordering authority delegated to base contracting
- Base awards and administers task orders
  - Primary players are engineering and contracting
  - AFCEA assistance available upon request
- 12 AFBs currently authorized to use this option





# ARMY REGIONAL ESPCs

## Full Service Option

- Installation puts up money (1% annual utility bill)
- Huntsville awards task orders
  - Provides engineering and contracting
  - Base and COE District provide input to Huntsville
- Base has primary responsibility for implementation
  - Works with COE District and Huntsville
- Charleston AFB, SC was the only Air Force activity under this option
  - DOD funded initial effort



# POINTS OF CONTACT

## — AFCEA/CEM:

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## — AF/ILEXO:

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# AIR FORCE POSITION

- AF will strive to meet EPCa and EO 13123 mandates through an aggressive facility energy management program using all available resources.
- ESPC is a primary means the AF will use to achieve EPCa and EO 13123 mandates.
- Government funding is the preferred method of accomplishing energy efficiency enhancements; however, the AF will not budget for such.



# AIR FORCE POSITION

- The AF will execute ESPC by AF, Army and Navy contracts, thereby providing needed capacity, leveraging resources, speeding execution, and demonstrating a Joint Service approach to the DoD ESPC initiative.
- The AF RESPC is the preferred means for a base to access an ESPC in the future. It is not necessary that existing efforts, using another means, be discontinued or switched to an AF RESPC.



# SUMMARY

- Energy funding will continue to decline
  - AF will not budget for energy money
- ESPC is dynamic and evolving Program and AF is a leader
  - Base may use RESPC, Army or Navy contracts, or local base-wide contracts
  - Approaching \$1.5B in AF contract capacity
    - » Already received approximately \$280M in ESCO Investments
    - » ESPC is, or soon will be, available for all AF activities



# QUESTIONS?





## SESSION 2

The ESPC Team:

Who are the players?

What are their roles?



# ESPC IS A TEAM EFFORT







# OVERVIEW

- Support Team Members
- The Base Team
- The RESPC Key Players
- Roles and Responsibilities
- Summary



# SUPPORT TEAM MEMEBERS

- **Overall Program Policies and Implementation**
  - **MAJCOM Headquarters**
  - **Engineering:** AFCESA/CESM
  - **Legal:** AFLSA/ULT
  - **Contracting:** SAF/AQCO
  - **Comptroller:** SAF/FMBOO



# THE BASE TEAM

- Senior Management
- Building Occupant
- Engineering
- Contracting
- Legal
- Comptroller

*The First Team*





# SENIOR MANAGEMENT “MUSTS”

**Keep Management Informed**

- Openly support the ESPC concept
- Provide necessary staffing
- Ensure funding issues receive proper attention
- Ensure all organizations participate



# BUILDING OCCUPANT

- Upper management commitment
- Building renovations-programmed or funded
- Facility mission changes
- Planned or programmed energy projects
- In-house or contracted maintenance services
- Availability of facility, escort personnel and project inspectors
- Other contract or project impacts - show stoppers

**Get them involved early!**



# PRIMARY BASE PLAYERS

- Engineering: ESCO becomes member of the staff
- Contracting: A new way of doing business
- Legal: New Laws, Executive Orders, Rules, etc. written just for ESPC
- Comptroller: Use the savings to pay the ESPC and budget to keep those savings for the next 10+ years.

You must think outside the box - but not outside the boundaries



# RESPC KEY PLAYERS

- **Key Players**
  - **Requesting Installation:** Any Federal Gov't activity that is supported by an AF engineering and contracting capability.
  - **Regional Contracting Officer (RCO):** The contracting officer responsible for administering the RESPC.
  - **AFCEA/CESM:** The Air Force ESPC Program Manager.



# KEY PLAYER RESPONSIBILITIES

- **Requesting Installation:**
  - Assemble an ESPC team
  - Coordinate with MAJCOM
  - Forward joint letter of request to use RESPC
  - Direct ESCO work
  - Evaluate Phase I and Phase II reports
  - Coordinate with AFCESA and lead base
  - Issue and administer task orders
  - Complete semi-annual reports
  - ESPC requires a team effort - several offices



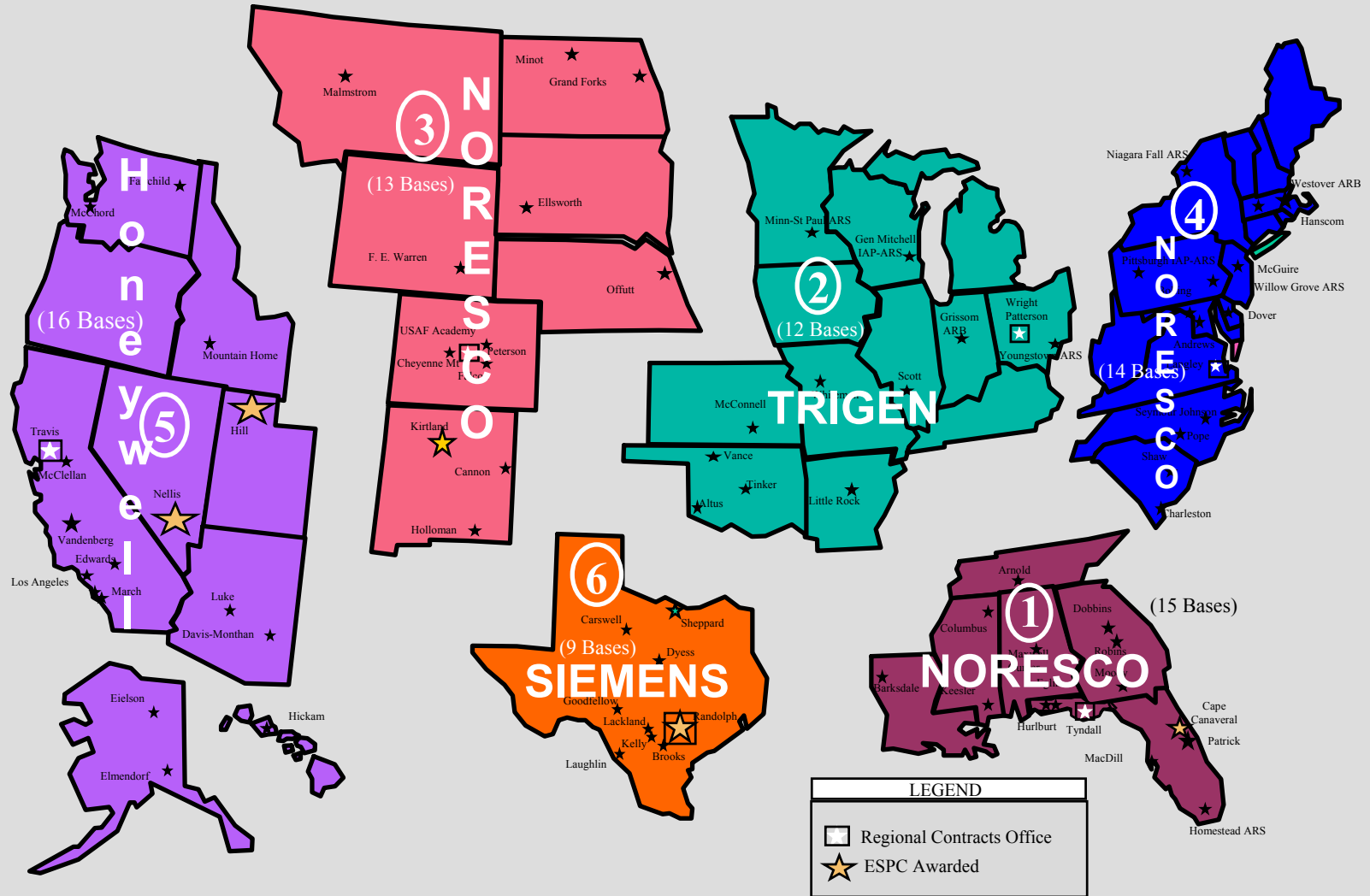


# KEY PLAYER RESPONSIBILITIES

- **Regional Contracting Officer (RCO):**
  - Awarded and will administer basic contract
  - Delegate ordering authority following AFCEA approval of requesting base
  - Monitor contract maximum
  - May award and administer task orders for lead base



# AIR FORCE REGIONAL ESPC





# RCOs

- **Region 1:** 325 CONS/LGC Tyndall AFB FL
- **Region 2:** ASC/PKW Wright-Patterson AFB OH
- **Region 3:** AFSPC/CONF Peterson AFB CO
- **Region 4:** ACC CONS/LGCV Langley AFB VA
- **Region 5:** 60 CONS/LGCV Travis AFB CA
- **Region 6:** AETC CONS/LGCU Randolph AFB TX



# KEY PLAYER RESPONSIBILITIES

- **AFCEA:**
  - Oversight of total ESPC program
  - Trains personnel in ESPC concepts and contracts
  - Approve bases to use RESPC and recommends the RCO delegate ordering authority
  - Provide assistance when requested
  - Upward reporting of program status



# SUMMARY

- ESPC requires a Team approach
- Team members assume new roles with different responsibilities with an ESPC
- Air Force has published ESPC Procedures to standardize program implementation



# QUESTIONS?





# SESSION 3

Contract  
Overview



# OVERVIEW

- Definition: Types of Work
- ESPC vs. Traditional Contracting
- Authorities
- Contract Overview (Sections B, E, F, and I)
- Section H Review
  - Getting Started - Air Force ESPC Procedures
- Summary





# ESPC DEFINITION

“The term . . . means contracts that provide for the performance of services for the design, acquisition, financing, installation, testing, operation, and where appropriate, maintenance and repair, of an identified energy or water conservation measure . . . .” (Sec. 703, E.O. 13123)



# ESPC VS. TRADITIONAL CONTRACTING

- Turnkey approach (Brooks Act)
- Construction inspector or Quality Assurance Evaluator (QAE)
- Performance Specification - Energy Savings
- Long-term contracting authority
  - Agencies should develop new contracting procedures



# CONTRACT FORMAT

- Energy Savings Performance Contract (ESPC) is the contract type
  - An ESPC is for the purchase of energy savings
  - ESPC contains elements of services, supplies, A&E, and construction contracts
    - Contract format customized to incorporate provisions from various types of contracts
  - Section B contains three CLINS - two are “Not Separately Priced”
  - Section H critical to successful contract execution



## SECTION B - SCHEDULE

- CLIN 0001 = Phase I and is Not Separately Priced
- CLIN 0002 = Phase II and is Not Separately Priced
- CLIN 0003 = Phase III and is the tool for ordering work - the Task Order





# CONTRACT OVERVIEW

- The contract is tailored for RESPC
- Section C is the basis for all ESCO reports and task orders (covered in-depth in Session 4)
- Section E has the inspection provisions
  - ESPC is a performance contract for energy savings
- Section F addresses contract performance
  - 25 year Performance Period is for all work
  - Pre-Performance conferences
  - Stop Work
  - Government Delay of Work
- Section G provides for task orders to localize contract administration actions



# CONTRACT OVERVIEW(con't)

- Section H customized for ESPC
  - H-6 **Davis Bacon Wage Rates** (Construction)

“ . . . Construction and testing work performed under this contract are subject to the minimum wages requirement of the Davis Bacon Act, . . . “
  - H-7 **Service Contract Act Requirements** (Services)

“ . . . Operations and maintenance services under this contract are subject to the requirements of the Service Contract Act of 1965, . . . “
  - H-8 **Fire Prevention** (Construction and Services)

The ESCO shall insure that all contract employees know how to report a fire. Contractor personnel shall observe all requirements for handling and storage of combustible supplies, materials, waste, and trash. Contractor employees operating critical equipment shall be trained to properly respond during a fire alarm or fire. Welding shall not be accomplished without prior coordination with the COR and approval of the Base Fire Department.
  - H-11 **Information Concerning Performance and Payment Bonds** (Construction)



# CONTRACT OVERVIEW(con't)

- **H-12 Protection of Lien Holder Interest** (Services and Construction)

- Assignment of claims (payments)
- Assignment of contract performance
- Cure / Show Cause notifications

- **H-17 Contractor Payments** (Services)

“ . . . a. The Government will begin making payments to the ESCO beginning the month following the first full calendar month after acceptance of the energy conservation measure by the Government. Payments will be structured . . . so as to divide the ESCO's share of the guaranteed annual savings into twelve equal, or nearly equal payments. Each year, before the twelfth month's payment is made, a reconciliation will be performed to ensure the guaranteed savings were achieved or exceeded. If the annual reconciliation reveals a shortfall between the guaranteed savings amount and the actual savings achieved for that year, the ESCO shall, by a single payment in the form of a credit on next monthly invoice, or as otherwise specified by the Contracting Officer pay to the Government the difference. Payments will continue for the period agreed to in the contract task order, up to the remainder of the contract term, except in the case of contract termination for the purpose of default or convenience.



# CONTRACT OVERVIEW(con't)

b. Payment will be calculated as shown in the following example:

- (1) ESCO estimates a savings of \$140,000/year, and
- (2) ESCO guarantees a savings of \$120,000/year
- (3) ESCO's monthly payment is determined by:

$$\$120,000 \text{ (guaranteed savings)} \div 12 \text{ months} = \$10,000/\text{month}$$

- **H-18 Governmental Legislation, Law or Other Policies**  
“ . . . this is a long-term contract, if and when new governmental legislation, law or policy is enacted . . . such new legislation, law, or policy may, at the Contracting Officer's discretion, be negotiated and incorporated into the contract.
- **H-21 Responsibility for Systems and Equipment** (Construction and Services)  
The contractor shall at all times during the term of the contract have full ownership responsibilities of the contractor-furnished systems and equipment.
- **H-22 Material Approval Submittals** (Construction and Services)
- **H-109 REQUIRED INSURANCE** (IAW FAR 28.306(b))





# GETTING STARTED

## ESPC PROCEDURES

- Written procedures for using Air Force and Army RESPCs
  - Issued by AFCESA as AF Program Manager
  - Provides standardized approach
- Road map for implementing ESPC work
  - Revised as necessary as program evolves
  - Upward reporting of program status

**A Step by Step Guide**



# SUMMARY

- The ESPC definition includes multiple types of work that may be accomplished in one contract vehicle
- ESPC differs from traditional contracting
- Special legislation for ESPC that is implemented by Code of Federal Regulations (CFR)
- Contract Overview
- Section H is critical to success of ESPC



# QUESTIONS?





# SESSION 4

Ordering  
Work



# OVERVIEW

- The Energy Plan
- General Information and Contract Scope
- Phase I - Preliminary Site Survey
- Phase II - Facility Energy Audit and Economic Analysis
- The Phase II Report / Proposal
- Phase III - ECM Implementation and Operations & Maintenance



# TASK ORDER (TO)

- Have a plan
- Send the ESCO where you want him
- Overlapping TOs
- Don't kill future projects
- Maximize benefit to base
- Future activities
  - De-regulation
  - Privatization/Outsourcing
  - A-76



# GENERAL INFORMATION AND CONTRACT SCOPE

- Contracting Officer's Representative (COR)
  - Designated on each task order
  - Usually the Base Energy Manager
- Access to Buildings/Contractor Work Hours
  - After hours and weekends preferred



# GENERAL INFORMATION AND CONTRACT SCOPE

- Government Furnished Facility/Storage Area
  - None provided by contract
  - May be provided by task order
- Contract Scope
  - All types of energy savings
  - Base-wide facilities
  - Remote Air Force activities





# PHASE I – PRELIMINARY SITE SURVEY

- Directed by letter from CO
  - List the buildings/systems the ESCO should evaluate
  - List any technology that is off-limits
  - Establish a due date - coord. with ESCO
- Overview approach to potential for savings
- Executive Summary Report



# EXAMPLES OF PHASE I CONSIDERATIONS

- Energy Billing Data (Historical)
- Major Energy Using Systems/Equipment Information
- Types of Systems/Equipment



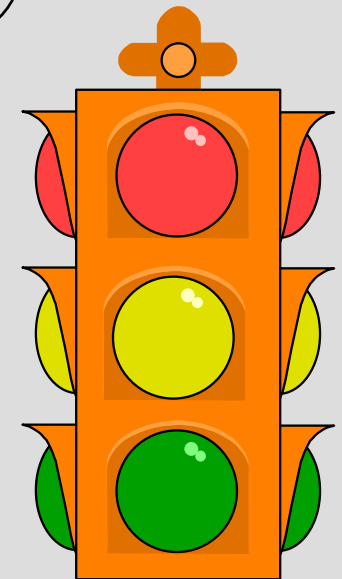
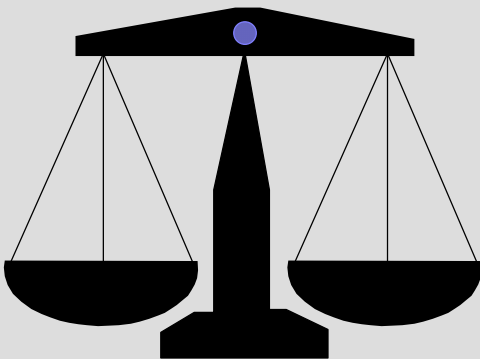
# EXAMPLES OF PHASE I CONSIDERATIONS

- General Facility Information
  - Square footage by area of building
  - Temperature and relative humidity requirements
  - Occupancy and occupancy schedule
  - Required equipment operating hours
  - Mission parameters



# PHASE I AUDIT REPORT

**Decision Tool: Go/No Go Decision to proceed to Phase II**





# PHASE II – FACILITY ENERGY AUDIT AND ECONOMIC ANALYSIS

- Directed by letter from CO
  - Lists building(s) to be included
  - Lists any ECP identified in Phase I that is not to be considered
  - Establishes a due date for Phase II Report
    - 90, 120, 180 days is common
    - Up to a year may be necessary
      - Time needed to validate baseline

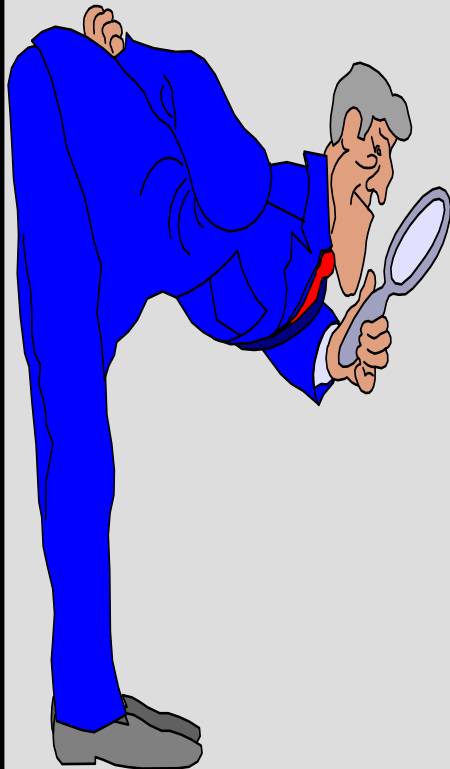


# PHASE II – FACILITY ENERGY AUDIT AND ECONOMIC ANALYSIS

- Detailed (investment grade) audit
  - Must be well organized and planned
  - Must be realistic
  - Requires multiple disciplines
  - Can be expensive and time consuming
  - Must be comprehensive



# EXAMPLES OF OPPORTUNITY AREAS



Building Envelope  
HVAC Equipment  
HVAC Distribution Systems  
Water Heating Systems  
Lighting Systems  
Power Systems  
Energy Management Control  
Systems  
Water Consuming Systems



# EXAMPLES OF HVAC EQUIPMENT ECPs

- Reduce Ventilation
- Improve Chiller Efficiency
- Improve Boiler/Furnace Efficiency
- Improve Air-Conditioner or Heat Pump Efficiency
- Reduce Energy use for Tempering Supply Air
- Use Energy-Efficient Cooling Systems





# EXAMPLES OF HVAC DISTRIBUTION SYSTEM ECPs

- Reduce Distribution System Energy Losses
- Reduce System Flow Rates
- Reduce System Resistance
- Reduce Hot Water Loads
- Reduce Hot Water System Losses
- Use Energy-Efficient Water Heating Systems



# EXAMPLES OF LIGHTING AND POWER SYSTEMS ECPs

- Reduce Illumination Requirements
- Install Energy-Efficient Lighting Systems
- Use Day-lighting
- Reduce Power System Losses
- Install Energy-Efficient Motors
- Reduce Peak Power Demand



# EXAMPLES OF ENERGY MANAGEMENT SYSTEMS ECPs

- Temperature Setup/Setback
- Time-of-Day
- Duty-Cycling
- Supply Air Temperature Reset
- Hot/Chilled Water Supply Temperature Reset
- Ventilation Purging
- Economizer Cooling
- Demand Limiting



# PHASE II REPORT

- **EXHIBIT A - Synopsis of Proposed ECM and Technical Proposal**
  - Synopsis/Overview
  - Complete and Detailed Technical Proposal
  - Proposed Financing Agreements



# PHASE II REPORT

- **EXHIBIT B - Calculations of Savings and Measurement and Verification (M&V) Plan**
  - Supports Estimated Energy and Demand Savings (Btu, kwh, kw, etc.)
  - Identifies Estimated Cost Savings (\$)
  - Provides the “Guaranteed Savings”
  - Proposed M&V Plan



# PHASE II REPORT

- **EXHIBIT C - ESCO Compensation Format**
  - Proposed Payment Schedule
    - Pro rated based only on Guaranteed Savings
    - May change on yearly basis
    - May or may not provide for sharing
    - Supported by cost breakdown - Figure C-1



# SAMPLE FIG. C-1

| BLDG(s)<br>#    | E<br>C<br>P<br># | Y<br>E<br>A<br>R | ECP<br>ANNUAL<br>COST | ANNUAL<br>GUARANTEED<br>SAVINGS<br>AMOUNT<br>(GSA) | ESCO's<br>ANNUAL<br>SHARE OF GSA<br>(percentage %) | ESCO's<br>ANNUAL<br>SHARE OF GSA<br>(dollars \$) | GOV'T<br>ANNUAL<br>SHARE OF<br>GSA<br>(percentage %) | GOV'T<br>ANNUAL<br>SHARE OF<br>GSA<br>(dollars \$) |
|-----------------|------------------|------------------|-----------------------|--|--|--|--|--|
|                 | 1                | 1                |                       |  |  |  |  |  |
|                 | 1                | 2                |                       |  |  |  |  |  |
|                 | 1                | 3                |                       |  |  |  |  |  |
| ECP #1<br>TOTAL |                  |                  |                       |  |  |  |  |  |
| BLDG(s)<br>#    | 2                | 1                |                       |  |  |  |  |  |
|                 | 2                | 2                |                       |  |  |  |  |  |
|                 | 2                | 3                |                       |  |  |  |  |  |
| ECP #2<br>TOTAL |                  |                  |                       |  |  |  |  |  |
| BLDG(s)<br>#    | 1                | 1                |                       |  |  |  |  |  |
|                 | 1                | 2                |                       |  |  |  |  |  |
|                 | 1                | 3                |                       |  |  |  |  |  |
| ECP<br>TOTAL    |                  |                  |                       |  |  |  |  |  |
| ECM Total       |                  |                  |                       |  |  |  |  |  |

Figure C-1



# PHASE II REPORT

## — **EXHIBIT D - Buildings**

- Identifies function of each building included in the report

## — **EXHIBIT E - Baseline Data**

- States all assumptions
- Documents historical/future energy use
- Documents historical/future O&M costs
- Provides basis for validating savings





# PHASE II REPORT

## — EXHIBIT F - ESCO Post-Implementation Responsibilities

- Functions the ESCO proposes to be performed throughout life of the task order
  - May be operations or maintenance related
  - May continue for 20+ years
- Government must evaluate cost and impact
  - Possible major impact on savings guarantees
  - Must evaluate ability to perform M&V
  - Must evaluate potential staffing impact



# PHASE II REPORT

## — EXHIBIT G - Government Post-Implementation Responsibilities

- Functions the ESCO proposes the Gov't perform throughout life of task order
- Gov't should use similar evaluation process as used for Exhibit F
  - Impact on savings guarantees?
  - Ability to perform M&V of savings?
  - Impact and availability of manpower



# PHASE II REPORT

## — EXHIBIT H - Standards of Services

- ESCO Proposed changes in service levels
  - Lighting level increases/decreases
  - Changes in temperature control settings
- Gov't must closely scrutinize the effects of accepting proposed changes
  - Often referred to during acceptance inspection



# PHASE II REPORT

- **EXHIBIT I - Final Performance Tests**
  - Outlines performance testing procedures proposed for the Government acceptance testing and identifies who will conduct the testing.
  - Each system to be tested will be identified with a cross-reference to the standard of performance the contractor proposes in EXHIBIT H.



# PHASE II REPORT

- **EXHIBIT J - Equipment Availability and ECM Implementation Schedule**
  - High demand items have longer lead times
  - Screening tool for potential delays
    - Do not remove old equipment before new equipment is received
  - Proposed implementation schedule should be reviewed for realism and timeliness



# PHASE II REPORT

- **EXHIBIT K - Termination or Buyout Costs**
  - Proposed cancellation or buyout schedule
  - Representative of the balance of payments
    - Includes principal, prepayment penalties, rebate/incentives repayment, etc.
  - Must be kept current after each negotiation
  - Indicator for Congressional Notification
    - Exhibit K > \$10M



# PHASE II REPORT

- **EXHIBIT L - Pre-existing equipment**
  - Inventory of equipment to be replaced
- **EXHIBIT M - Subcontracting Plan**
  - Identifies work that will be subcontracted
  - Should comply with basic contract plan
  - Explains absence of subcontracting
- **EXHIBIT N - ECPs Evaluated**
  - Lists and explains all ECPs that were evaluated, but NOT recommended



# GOV'T RESPONSE TO PHASE II REPORT

- ESPC is a joint venture/partnership and all energy saving work proposed by the ESCO will be accepted by the AF unless there are compelling reasons not to implement.
- The AF has three choices for each Phase II
  - Accept - Issue task order
  - Return for changes/corrections
  - Reject - Must be for cause as established in the contract





# REJECTION OF PHASE II REPORT

- The Gov't may reject (not implement) the proposed energy saving work if:
  - Gov't and ESCO cannot agree on either the baseline or the M&V method
  - The economic payback for the total ECM exceeds 10 years
  - The proposed ECP/M is not reasonably practical and workable for the installation



# REJECTION OF PHASE II REPORT

- The Gov't determines the ECP/M could be detrimental to the national defense mission or quality of life of the installation
- ECM implementation cost cannot be paid from the savings generated by the ECM
- The status of the facility, or facilities, is such that it is not in the best interest of the Gov't to incur the investment liabilities for energy improvements



## PHASE III

- Phase III work shall be directed by contract task order (vice letter for Phase I and II)
- Period of performance may be 10 yrs or more
- Schedules and permits
- Environmental requirements
- Inspection and Acceptance



# PHASE III

- Equipment Maintenance
  - Scheduled
  - Unscheduled
    - Response times
- Training of Gov't Personnel
  - Immediately following implementation
  - Just prior to task order completion
- Utility Rates Changes
- Budgeting



# EQUIPMENT OWNERSHIP

- Ownership Responsibilities remain with the ESCO (we are buying energy savings)
  - Replacement in kind without approval
  - Change in make or model requires approval
- Financier may have security interest
  - CO approval required
- Title passes to AF upon completion
- Ownership responsibilities negotiable



# SUMMARY

- Review of Section C
- Three phased approach
- Phase II at heart of contract
  - Proposal
  - Task order work statement
- Good faith partnership between ESCO and AF
- Phase III occurs over many years
- Ownership and title generally pass upon completion of task order



# QUESTIONS?





# SESSION 5

ECONOMIC

EVALUATIONS





# OVERVIEW

- ECP vs ECM
- Types of Savings
- Project Economics
- Rules of Thumb
- Examples
- Conclusion



# ECP DEFINITION

- **ENERGY CONSERVATION PROJECT (ECP):** A project to retrofit or replace a single energy consuming system, i.e., exit lighting, warehouse lighting, office lighting, central heating/cooling, office cooling, etc. ECPs may be combined to form an Energy Conservation Measure (ECM).
- **ENERGY CONSERVATION MEASURE (ECM).** An initiative to improve the energy efficiency of a facility or group of facilities. For purposes of this contract a ECM is equivalent to a contract task order which may consist of a single ECP or multiple ECPs. ECMs shall not exceed a ten-year simple payback.



# ECP vs. ECM

- ECPs can have more than 10 year pay-back
  - Common sense required
  - Life of equipment
- ECM should not exceed a 10 year simple pay-back
- ECM - Combine ECPs



# TYPES OF SAVINGS

- Energy
  - BTUs and Dollars
  - No BTUs but Dollars
  - BTUs but No Dollars
  - Escalation is not recommended
- Ancillary
  - O&M
  - Capital Investments
  - Other



# ENERGY DOLLAR SAVINGS

- Use data on Utility Bill
  - Consumption
  - Demand
  - Fixed Costs
- Don't use reimbursable sales rate or blended rate



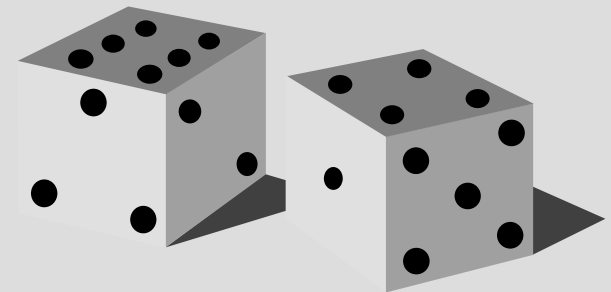
# ANCILLARY SAVINGS

- O&M
  - Existing Service Contracts
  - Supplies
  - Manpower
- Capital Investment
- Other
  - Water



# PROJECT ECONOMICS

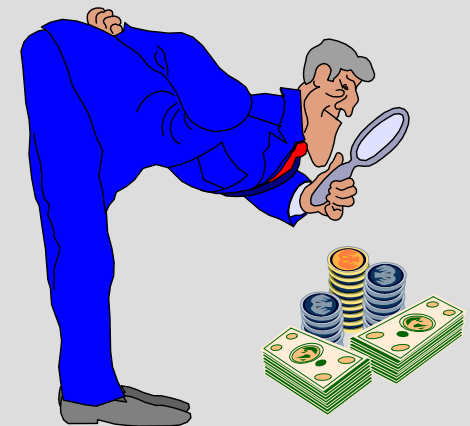
- What's Included?
  - Savings Produced
  - Contractor Investment
  - Rebates/salvage value





# SAVINGS PRODUCED

- Current utility rates, including demand, on/off-peak rates, etc.
- Energy consumption of existing equipment based on ACTUAL operating conditions
- O&M costs of the existing/new equipment
- Estimated annual consumption for proposed systems
- Estimated annual energy savings, O&M costs/savings







# CONTRACTOR INVESTMENT

- Capital Costs
- O&M Costs
- Construction Costs



# ECONOMIC ANALYSIS

- Project cost estimate:  
ESCO prepares - Gov't reviews/approves
- Life cycle cost economic analysis:  
ESCO prepares - Gov't reviews/approves
- Estimate energy and other cost savings:  
ESCO prepares-Gov't reviews/approves
- Prepare private sector financial analysis:  
ESCO prepares - Gov't reviews/approves
- Evaluate results of economic and financial analysis:  
ESCO prepares - Gov't reviews/approves
- Government cost estimate:  
Gov't performs a "Should-cost analysis"



# TOOLS TO USE

- **LCCID**, Developed by CERL for MILCON, ECIP projects
  - User friendly (Windows based)
  - Savings/costs identified
  - Structured input, can't be locally adjusted by user
- **BLCC**, Developed by DOE for all facility projects
  - Input variables can be adjusted
  - Mid-year design/construction
  - Includes emissions savings



# EXAMPLES

- Lighting Project (ECP)
  - Cost \$ 265,000      annual savings \$ 50,000
  - SIR: 2.55              simple payback: 5.3 yrs
- Chiller Project (ECP)
  - Cost \$695,000      annual savings \$55,000
  - SIR: 1.26              simple payback: 12.6 yrs
- Combined ECPs (ECM)
  - Cost \$960,000      annual savings \$105,000
  - SIR: 1.61              simple payback: 9.14 yrs



# ECONOMICS OF ESPC

- Finding the simple payback of an ESPC

- Costs:

|   |                 |
|---|-----------------|
| • Audits and Design costs                                   | \$5,000         |
| • Construction cost of materials, labor,<br>set-up, permits | \$100,000       |
| • Finance charge for construction loan only                 | \$5,000         |
| – Salvage value of existing equipment (if any)              | -\$5,000        |
| – Utility incentives/rebates applied to loan (if any)       | <u>-\$5,000</u> |
| – Total investment to install ECM                           | \$100,000       |



# ECONOMICS OF ESPC (Con't)

- Total investment to install ECM \$100,000
  
- Annual energy savings from ECM:
  - Energy savings (energy and demand) \$11,000
  - O&M savings(validated) \$1,000
- Total annual energy savings \$12,000
  
- For a Simple Payback:
  - Cost of Investment/Total annual savings =  
$$\frac{\$100,000}{\$12,000} = \mathbf{8.33 \text{ yrs}}$$



# CONCLUSION

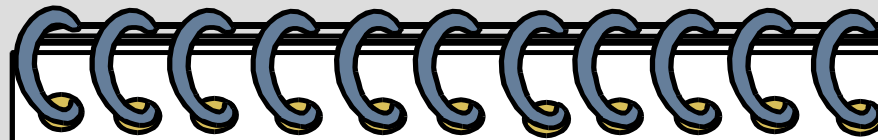
- This provides a sanity check with something you're familiar with.
- If it's not cost effective when using "our" dollars it will not be cost effective using ESPC
- Gives you all the numbers on one sheet, easy to assess the pros/cons.
- Not the ONLY factor in deciding on ESPC.



# QUESTIONS?







# SESSION 6

MEASUREMENT

AND

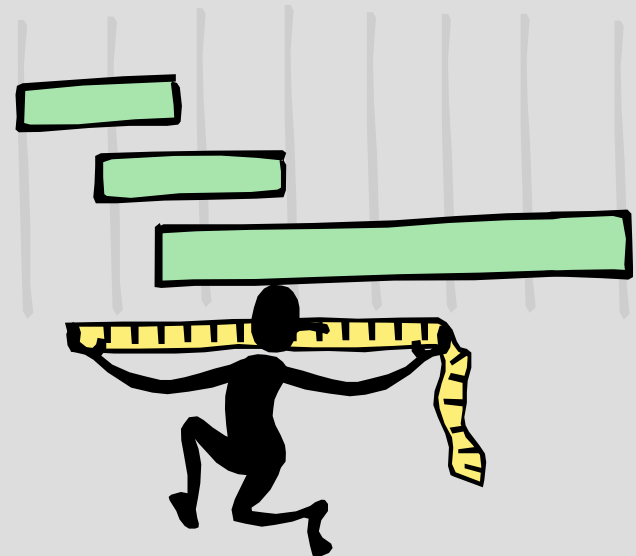
VERIFICATION

(MEV)



# OVERVIEW

- What is a Baseline?
- What is M&V
- Potential Trouble Spots
- Rules of Thumb
- Conclusions





# WHAT IS A BASELINE?

- What is a Baseline?
- Why is a Baseline important?
- How is a Baseline prepared?



# WHAT IS AN ENERGY BASELINE?

An Energy Baseline is a prediction of the amount of energy that would have been used if there had not been any energy conservation equipment installed



# WHAT IS M&V?

- Verifies the baseline conditions are accurately defined
- Verifies the ECP's actual savings
- Used to certify payment to ESCO



# WHAT'S OUT THERE?

- The International Performance Measurement and Verification Protocol (IPMVP)
  - Collaborative effort with industry, financial and government
  - Used by ESCOs
  - Provides four basic options
- FEMP M&V used by many ESCOs
  - Numerous options and equations
  - Defines levels of accuracy and cost



# WHAT ARE THE OPTIONS?

- Option A, Engineering calculations with spot metering, simplistic approach
- Option B, metering required for each system used (long -term)
- Option C, whole building evaluation including historical data, metering
- Option D, Computer simulation (calibrated)



# THE M&V PLAN

- M&V plans specify:
  - Goals and objectives
  - Characteristics of the facility and the ECM
  - M&V Option, method and analyses techniques
  - Metering points, periods and protocols
  - Quality assurance procedures
  - Reporting and documentation procedures





# POTENTIAL TROUBLE SPOTS

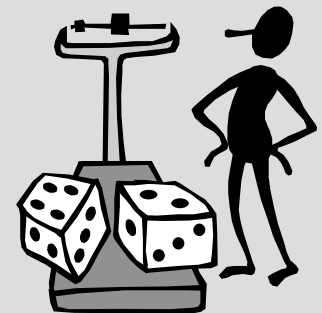
- Rate blending of all ECMs can cost you dollars
- Double counting savings
- Maintenance savings beyond the “normal”
- Military unique, i.e. no heat/no cool periods





# RULES OF THUMB

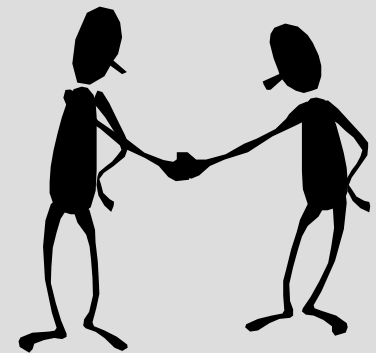
- No best approach for developing the baseline
- Use M&V option most appropriate for task
- Considerations
  - Accuracy vs Cost
  - Accuracy vs Ease of Use
  - Accuracy vs Contractor Risk





# CONCLUSIONS

- M&V
  - Defines the savings potential for each ECP & ECM
  - Verifies results of the installed equipment
  - Must be agreed to up front!!
  - Adjustments should be included
  - Validate yearly, spot check when possible





# QUESTIONS?





# SESSION 7

Special Interest Items



# OVERVIEW

- MFH issues
- Real Property issues
- Encumbrances
- DOE contract
- Summary



# MFH Issues

Military family housing (MFH) funds are appropriated separately and are used specifically for MFH purposes. MFH ECPs must use savings only from other MFH ECPs to avoid subsidizing or being subsidized by other than MFH-funded sources. Use of MFH funds for a purpose outside their appropriated use would result in a violation of the Purpose Act (31 USC 1301).

Note: all bases reviewing ESPC proposals dealing with MFH must coordinate with the MAJCOM housing office and Air Staff ILEH, before allowing the ESCO to start a phase II proposal.



## MFH Issues (cont)

All MFH ECPs should be thoroughly evaluated against future MFH renovations or new housing initiatives for possible reduction or elimination of projected ESPC savings. When ECP savings are eliminated or greatly reduced, a buyout may be required. It is recommended that the base programming function include the cost of the ECP buyout on the Department of Defense form (DD) 1391, **Military Construction Project Data**. It is recommended that all ECPs for housing be coordinated with the base housing officer and the MAJCOM housing function during the Phase I/II reviews. Recent events indicate an increase in funds for MFH; therefore, every level of management should be included in the review process for an ECP to be accomplished within MFH.





# Real Property

- Notify the real property office of equipment replacement
- Provide a copy of exhibit L - Pre-existing equipment
  - Inventory of equipment to be replaced
- The PRV and RPIE records may need updating



# Encumbrances

Facilities, which are encumbered with an ESPC contract, may require "buyout" of such encumbrances prior to work being performed. When government actions on a facility (e.g. demolition, upgrades, construction, or privatization) will impact the ESPC contractor materials/equipment installed under an Energy Savings Performance Contract, or otherwise alter the conditions of the contract, making the affected portion of the contract no longer valid, programming for the encumbered facility should consider funds to "buyout" the applicable portions of the contract. If possible, "buyout" funds should be programmed with the same fund source as the project itself; however, this may not be possible with all work types.



# DOE ESPC Contract

To use a DOE ESPC contract, the installation/command must accomplish several steps prior to engaging an ESPC contract with DOE.

- All requests to use the DOE contract must come through AFCEA for coordination.
- AFCEA will assist base engineering and contracting in the development of a Determination and Findings (D&F) document. This document must be signed at the general officer level.
- Base must receive training from DOE on implementing an ESPC.
- AFCEA will provide training on the Air Force requirements when using an ESPC.
- Delegation of authority will be sent to the installation from DOE with a copy to AFCEA. During the ESPC review process the base will advise AFCEA of the total obligation for the awarded contract.
- AFCEA will provide technical reviews if requested.



# DOE ESPC Contract

- Recent events have required a new approach to using the DOE ESPC contract to include:
- Changes in availability of existing contracts
  - Several AF regions nearing contract headroom
  - Army/AFCEA MOA no longer applies, only Army full service available to bases
- A new interagency agreement with DOE is being worked (ECD ???)
- Developing joint training



# Summary

- The Energy and ESPC background
- The team players
- Procedures for implementing an ESPC contract
- Reviewed the sections within the proposal
  - Phase I, II, III
- The economics of the program
- The M&V principles
- The special interest items



# QUESTIONS?

GOOD LUCK WITH ESPC!!

